



Evidence Brief: The Effectiveness Of Mandatory Computer- Based Trainings On Government Ethics, Workplace Harassment, Or Privacy And Information Security-Related Topics

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Prepared By:

Evidence-Based Synthesis Program (ESP)
Coordinating Center
Portland VA Medical Center
Portland, OR
Mark Helfand, MD, MPH, MS, Director

Prepared By:

Kim Peterson, MS
Ellen McCleery, MPH



PREFACE

Quality Enhancement Research Initiative's (QUERI) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) clinicians, managers and policymakers as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout the VA, and some evidence syntheses inform the clinical guidelines of large professional organizations.

QUERI provides funding for four ESP Centers and each Center has an active university affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence;
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of HSR&D Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at Nicole.Floyd@va.gov.

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EXECUTIVE SUMMARY

The VA biennially requires every employee to complete a combined 5.5 hours of computer-based training on the topics of information security, workplace harassment, and government ethics. The annual cost for the three core trainings has been estimated at \$40 million. Yet, the VA has neither generated nor found any evidence to establish that these mandatory trainings improve workplace performance.

PREVIOUS RESEARCH

In 2010, at the behest of the Mandatory Training Workgroup, the VA Technology Assessment Program (TAP) released a Brief Overview of evidence on the organizational effectiveness of mandatory learning strategies. That Brief discovered little evidence on the subject and concluded that choice may be an important determinant of organizational learning and training effectiveness may vary by evaluation criteria, delivery method, subject, and criteria for operationalizing training.

Subsequently, the Mandatory Training Subcommittee released *The Burden of Mandatory Training* in 2012. The Subcommittee did not identify any studies in the VA or otherwise of the effectiveness of any VA mandatory training programs. Additionally, the Subcommittee's qualitative evaluation of employee perceptions found universal unhappiness about the mandatory training requirements. Common themes include criticism that the mandatory trainings take up too much time, are not optimally accessible (including the varying locations and usability of courses), vary in quality, lack alternatives to online courses, and do not adapt to an individual's role and his or her existing knowledge on the subject.

THIS REVIEW

In February 2014, to maintain the currency of knowledge about evidence on mandatory training on the topics of information security, workplace harassment, and government ethics, the Mandatory Training Workgroup requested that the VA Evidence-based Synthesis Program Coordinating Center (ESP CC) conduct an updated Evidence Brief on this topic. This Evidence Brief found no studies that directly evaluated the effectiveness of mandatory trainings on government ethics, workplace harassment, or privacy and information security-related topics that used computer-based delivery methods. It also found no evidence on organizational outcomes of mandatory training.

CONCLUSIONS

The enormous burdens of cost and negative employee perceptions cited in the 2012 Subcommittee report, taken together with our finding of unknown benefits, suggests that the VA would be well served to more closely consider the benefits of their mandatory training programs. More studies are needed that compare mandatory training approaches similar to the VA's in topic, length, frequency, and delivery format to suggested alternatives. The VA may consider implementing pre-testing and piloting alternatives to its current approach, using VA Learning University Training Management System (VALU-TMS) data to evaluate comparative effectiveness. Results from such studies should guide future training.



INTRODUCTION

In large organizations such as the VA, mandatory training has become an integral part of workforce learning.¹ Some common reasons for adopting mandatory training for all employees include showing employees management's commitment to the topic area,² promoting positive change,³ promoting overall staff safety,¹ and legal or compliance considerations.³ In some cases, such as for the topic of diversity, mandatory training efforts are directly tied to federal requirements instituted in response to employee wrongdoings that resulted in corporate lawsuits.⁴ Numerous courts have held that to avoid punitive damages, employers must provide training to their employees on harassment and discrimination prevention. (187 F.3d 1241 (10th Cir. 1999); 270 F.3d 794 (9th Cir. 2001); 281 F.3d 452 (4th Cir. 2002)) The Tenth Circuit Court of Appeals stated that “the extent to which an employer has adopted antidiscrimination policies and educated its employees about the requirement of [the discrimination laws] is important in deciding whether it is insulated from vicarious punitive liability.” (187 F.3d 1241 (10th Cir. 1999)) The costs associated with mandatory training program management can be quite high, resulting in annual expenditures in the hundreds of millions of dollars across U.S. organizations.⁴

The laws that motivate mandatory compliance training are often broad in nature and generally do not set standards on training content or evaluation.² This leaves organizations with the ability to implement training in a compulsory manner to serve a symbolic purpose, with little attention to whether their training methods are actually effective.⁴ Unfortunately, training implemented merely to serve a symbolic purpose may be creating a false sense of organizational security.⁵ Research has found that the mere existence of an anti-harassment policy is not always sufficient to protect the employer from liability⁶ (239 F.3d 848 (7th Cir. 2001)). Likewise, in an article on the effectiveness of diversity training, a Harvard sociologist indicated that there is no history of any court giving an employer credit for the mere existence of diversity training.⁴

Mandatory training is traditionally unpopular,¹ and there is a perception that it is ineffective and decreases motivation to learn. Some education theory-related barriers to learning that may reduce the effectiveness of mandatory training include employee resentment about their lack of control, lack of interest, perception of irrelevancy to their specific workplace context, and workplace time pressures.¹ Considering the high cost associated with mandatory training and doubts about its effectiveness, organizations would be well served to more closely consider the benefits of their programs.

An extensive literature on general organizational training research is available to inform decisions about how to design, implement, and evaluate training in a variety of settings.^{7,8} The design and evaluation of training is based on a wide variety of theoretical frameworks. There is a good deal of consensus about the best practices that organizations should engage in before, during, and after training in order to maximize effectiveness.⁸ Pre-training factors associated with training effectiveness include individual characteristics such as cognitive ability,⁹ self-efficacy,^{7,10} and motivation^{9,10} and needs assessments. Experts recommend that one of the most important steps in developing training is to conduct a pre-training needs analysis to identify the competencies needed, training priorities, and who needs the training.⁸ Factors that matter during training include individual characteristics and instructional strategies and principles. In recent years, group training, distance learning, and computer-based training have become



common training delivery systems in many work organizations. Post-training factors associated with effectiveness include the ability to use skills and knowledge gained from training,¹¹ delay between training and use of skills and knowledge,⁷ social, peer, subordinate, and supervisor support and training evaluation efforts.¹² The Kirkpatrick Model of Training Evaluation is commonly used as a framework for evaluating training programs.¹³ Organizations have struggled to conduct training evaluation due to the labor and costs involved, and difficulty with credible field evaluation.⁷ Since most empirical research is still relying on surveys to measure learning outcomes,⁸ there is still a need for more research using formal experimental designs to evaluate training effectiveness. Although there has been an increase in general training-related research,⁷ it is unclear whether the best practices identified in the general training literature have their desired effect on outcomes in the mandatory training domain.

The VA currently requires all employees to undergo mandatory training on the topics of Government Ethics, Prevention of Workplace Harassment/No Fear Act, and Privacy and Information Security Awareness and Rules of Behavior (<http://www.valu.va.gov/Home/MandatoryTraining>). Table 1 summarizes content and timing details for each of these training topics.

Table 1: Current Trainings Mandatory for all VA Employees

Training Topic	Content	Delivery	Hours Required	Recertification
VA Privacy and Information Security Awareness	Security information and general privacy	Computer-based	1.00	Annually
Prevention of Workplace Harassment	Equal employment opportunity, non-discrimination, whistleblower protections	Computer-based	1.50	Biennially
Annual Government Ethics Training	General government ethics	Computer-based or Information Security Officer-led ^a	1.00	Annually

^a This alternative requires coordination with an employee’s local TMS Administrator.

The requirements for the three trainings that are mandatory for all VA employees originate from Executive Orders, Congressional mandates, the Office of Personnel Management, regulatory bodies, and VA department-level requirements. These regulatory directives do not specify requirements about the format, content, or method of delivery of training material. Originally, the VA provided local facility leadership with the flexibility to locally manage their mandatory training processes, including tracking and recording employee attendance. This allowed local facilities to customize their approach to meeting the training mandates based on the local culture, which included a variety of training formats including face-to-face sessions, videos, handouts, or multiple modalities. Eventually, national tracking became more of a priority for the VA, and this led to centralization and standardization of mandatory training. Currently, all VA mandatory training is computer-based, and it is delivered and tracked via the VA Learning University Training Management System (VALU-TMS).



In order to evaluate the use and outcomes of mandatory training in the VHA, the National Leadership Council's Human Resource Committee chartered the Mandatory Training Workgroup in November 2008. The workgroup was designated as a standing subcommittee in October 2010. The goal of the Subcommittee is to "envision a strategic evidence-based approach to Mandatory Training that linked employee learning to organizational outcomes." The workgroup envisions "that mandatory training, used sparingly, would become meaningful, focused, effective, flexible, and satisfying to all employees." The Subcommittee has suggested various revisions to the VA's current mandatory training approach that include rescinding the requirements entirely, changing the requirements to "highly recommended" instead of mandatory, combining topics, reducing course length and/or frequency, limiting target audience, substituting a competency-based or stepped training approach, and adding additional delivery formats to allow learners to select resources that best fit their individual learning styles. The theoretical advantages of computer-based training include convenience, flexibility in scheduling, consistency of material presented, and tracking and documentation capabilities.¹⁵ But what is not taken into consideration by computer-based methods is that people learn in different ways.

In their 2009 report on the burden of VA mandatory training, the Mandatory Training Subcommittee raised questions about the value of the VA's mandatory training program.¹⁶ The Subcommittee estimated that VHA spends \$40 million a year just for the three core trainings mandated for VA employees (Table 1).¹⁶ Despite these high estimated costs, the Mandatory Training Subcommittee did not identify any studies in VA or otherwise of the effectiveness of any VA mandatory training programs. Additionally, the Subcommittee's qualitative evaluation of employee perceptions found universal unhappiness about the mandatory training requirements. Common themes include criticism that the mandatory trainings take up too much time, are not optimally accessible (including the varying locations and usability of courses), vary in quality, lack alternatives to online courses, and do not adapt to an individual's role and his or her existing knowledge on the subject.¹⁶ The Subcommittee report concluded that, given the enormous burdens of cost and negative employee perceptions, the VA would be well served to more closely consider the benefits of their mandatory training programs.

In January 2009, the Mandatory Training Workgroup asked the VA Technology Assessment Program (TAP) to conduct a Brief Overview of evidence on the organizational effectiveness of mandatory learning strategies.¹⁷ The VA TAP Brief identified very little evidence on the subject and their main findings were that volition may be an important determinant of organizational learning and that training effectiveness may vary as a function of evaluation criteria, training delivery method, the subject being taught, and the criterion used to operationalize effectiveness. In February, 2014, to maintain the currency of knowledge about evidence on mandatory learning strategies, the Mandatory Training Workgroup requested that the VA Evidence-based Synthesis Program Coordinating Center (ESP CC) conduct an updated Evidence Brief on this topic.

An evidence brief differs from a full systematic review in that the scope is narrowly defined and the traditional review methods are streamlined in order to synthesize evidence within a shortened timeframe. An evidence brief does not outline the full context in which the information is to be used and does not present a comprehensive assessment of knowledge on the topic. Brief or rapid review methodology is still developing and there is not yet consensus on what represents best practice.



SCOPE

The objective of this Evidence Brief is to synthesize the literature on the effectiveness of mandatory online employee compliance training. The ESP Coordinating Center investigators and representatives of the VHA Mandatory Training Subcommittee worked together to identify the population, comparator, outcome, timing, setting, and study design characteristics of interest. The VHA Mandatory Training Subcommittee approved the following key questions and eligibility criteria to guide this review:

Key questions

- Key Question 1: What is the effectiveness and comparative effectiveness of mandatory computer-based trainings on government ethics, workplace harassment, or privacy and information security-related topics?
 - Key Question 1a: Does the effectiveness of these mandatory computer-based trainings vary by format (eg, just-in-time training, competency-based assessment, stepped training delivery) or repetition of training?
 - Key Question 1b: Does the effectiveness of these mandatory computer-based trainings vary by the method of training delivery (eg, length, audiovisual components)?
- Key Question 2: What are the harms (eg, turnover, morale, grievances, institutional and opportunity costs) of these mandatory computer-based trainings?

INCLUSION CRITERIA

The ESP included studies that met the following criteria:

- *Population*: adults in the workforce
- *Intervention*: mandatory online training targeted to a broad base of employees to address an organization-wide need (eg, ethics, prevention of workplace harassment, information security)
- *Comparator*: no training, other training methods, or other activities
- *Outcomes*: trainee learning (eg, changes in knowledge or skills), trainee behavior, or organizational change (eg, changes in productivity, turnover, morale, grievances, or patient outcomes)
- *Timing*: longitudinal studies
- *Setting*: workplace
- *Study design*: randomized controlled trials and observational studies

This Evidence Brief will not include the following:

- *Population*: students of any age
- *Intervention*: continuing medical education
- *Outcomes*: trainee reaction (eg, attitudes towards or satisfaction with the training program)
- *Study design*: qualitative studies



METHODS

To identify articles relevant to the key questions, our research librarian searched Medline, PsychINFO, PAIS, ERIC, Gale Business Economics and Theory, and EBSCO Business Source Elite/Premier using the terms *employee training* and *web-based* (see Supplemental Materials for complete search strategies). Additional citations were identified from hand searching reference lists and consultation with content experts. We limited the search to published and indexed articles involving human subjects available in the English language. Study selection was based on the eligibility criteria described above. Titles, abstracts, and full-text articles were reviewed by one investigator and checked by another. All disagreements were resolved by consensus.

We used predefined criteria to rate the internal validity of all longitudinal studies. We used Cochrane's Risk of Bias Tool to rate the internal validity of controlled trials.¹⁸ We used methods from the US Preventive Task Force to rate the internal validity of cohort studies.¹⁹ We abstracted data from all longitudinal studies and results for each included outcome. All data abstraction and internal validity ratings were first completed by one reviewer and then checked by another. All disagreements were resolved by consensus.

We graded the strength of the evidence based on the AHRQ Methods Guide for Comparative Effectiveness Reviews.²⁰ This approach incorporates four key domains: risk of bias (includes study design and aggregate quality), consistency, directness, and precision of the evidence. It also considers other optional domains that may be relevant for some scenarios, such as a dose-response association, plausible confounding that would decrease the observed effect, strength of association (magnitude of effect), and publication bias. Strength of evidence is graded for each key outcome measure and ratings range from high to insufficient, reflecting our confidence that the evidence reflects the true effect.

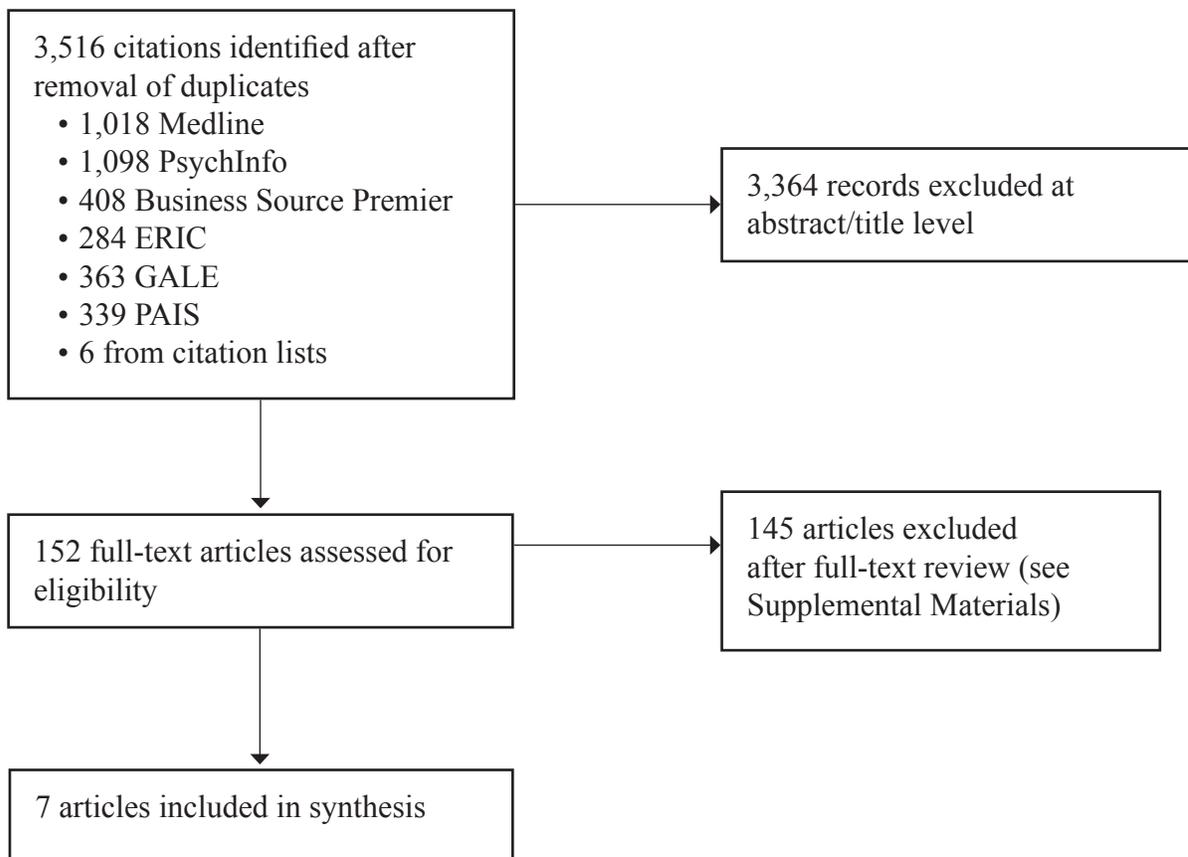
A draft of this report was reviewed by six invited peer reviewers. Reviewer comments and author responses can be found in the Supplemental Materials.



RESULTS

Figure 1 provides the results of the study selection process. A full listing of all studies excluded at the full-text level is provided in the Supplemental Materials. We included two controlled trials and two cohort studies. We discussed results from three cross sectional studies to address gaps in longitudinal study evidence but, because of their known limitations in demonstrating causal relationships, we universally considered results of cross-sectional studies to be insufficient for supporting conclusions.

Figure 1. Literature Flow Chart



KEY QUESTION 1: What is the effectiveness and comparative effectiveness of mandatory computer-based trainings on government ethics, workplace harassment, or privacy and information security-related topics?

We found no studies that directly evaluated the effectiveness of mandatory trainings on government ethics, workplace harassment, or privacy and information security-related topics that used computer-based delivery methods. But we found three studies that evaluated the effectiveness of mandatory trainings on diversity awareness^{21,22} and sexual harassment topics³ that used non-computer-based methods.



Mandatory Diversity Awareness and Sexual Harassment Training

Among these three studies, the strongest evidence comes from a cohort study that compared knowledge and behavior outcomes between trainees that participated in a mandatory full-day, instructor-led, group training and a matched comparison group who had not yet attended the training.²² Trainees were 69 supervisors or managers employed by the county government of a large metropolitan area in the Southeastern United States. The control group was 56 employees who were matched by tenure, ethnicity, sex, rank, and functional area. The training included a lecture, a question and answer session, a group exercise, a case presentation and group discussion. Knowledge of social perception biases was measured using the Cultural Awareness Instrument (CAI). Coworkers rated participants' discriminatory treatment of culturally diverse individuals using a revised version of the Discrimination Scale. Outcomes were ascertained one year after training. Training had no effect on knowledge of social perception biases ($P>0.05$). However, there is a risk that the detection of a training effect may have been reduced due to a potential for the control group's exposure to the training concepts by virtue of intermingling with the trainees throughout the year. Interestingly, training resulted in higher levels of discriminatory treatment as rated by the participant's coworkers ($P<0.05$). Further, among the training group, non-White coworkers reported higher levels of differential treatment compared with White coworkers ($P<0.01$). A potential alternative explanation for this finding is that knowledge of training group assignment by the coworker assessors may have affected their evaluations.

The other two studies used cross-sectional designs to evaluate the association between reason for sexual harassment or diversity training (*ie*, mandatory/voluntary or legal compliance/strategic) and training success as perceived by surveyed human resource professionals.^{3,21} Both studies found some variability in perceived training success associated with reason for training, but because of the known limitations of cross-sectional designs in demonstrating causal relationships and the potentially invalid exposure and outcome measures used, these studies provided insufficient evidence to draw conclusions about their findings. It is unsurprising that human resource professionals perceive that training is more effective when they perform additional pre- and post-training activities.

The more recent cross-sectional study evaluated the effects of reason for training on the relationship between best practices in sexual harassment training and training success as perceived by human resource professionals.³ Survey respondents were 321 human resource and personnel directors from Dun and Bradstreet, a provider of business information and mailing lists. Training delivery methods were not described. Reason for training was categorized as legal compliance or strategic motivation. The best practices evaluated were pre-training activities (*eg*, assessing employees' knowledge about sexual harassment issues or the need for training), active training methods (*eg*, interactive discussions, small-group exercises), passive training methods (*eg*, videos, computer-based instruction), and post-training activities (*eg*, providing reference materials). Respondents used a 5-point Likert scale to rate training success based on two questions: "All things considered, how would you evaluate the success of your organization's sexual harassment training efforts?" (1=extremely unsuccessful; 5=extremely successful) and "The number of sexual harassment complaints in my organization is unacceptably high" (1=strongly disagree; 5=strongly agree). When reason for training was legal compliance with federal mandates, the number of pre-training activities had no significant effect on training



success ($P>0.05$); whereas, when the reason for training was “strategic”, the number of pre-training activities had a significant and positive effect on self-reported training success ($P<0.05$). The number of post-training activities had a significant effect on training success when the reason was strategic ($P<0.05$), but not when the reason was legal ($P>0.05$).

The second cross-sectional study evaluated the association between perceived success of diversity training and whether reason for training is voluntary or mandatory.²¹ Survey respondents were 785 non-consultant, non-self-employed members of the Society of Human Resource Management (SHRM). Training delivery methods were not described and were assumed to vary across organizations. Respondents used a 5-point Likert scale (1=extremely unsuccessful; 5=extremely successful) to rate training success based on two questions: “All things considered, how would you evaluate the success of your organization’s sexual harassment training efforts?” Regression analysis found that perceived training success was statistically significantly associated with mandatory management attendance ($P<0.001$), but not for mandatory nonsupervisory attendance.

Mandatory Training in Other Topic Areas

Because of the dearth of evidence about the topic areas of interest, we looked to studies outside of our training topics of interest for indirect evidence about mandatory training effectiveness. We identified two longitudinal studies that evaluated how the degree of choice in taking training courses in performance reviews and interviewing or proofreading skills affects training outcomes.^{23,24} These two studies provided low-strength evidence that higher degree of choice in taking a training course was statistically significantly associated with higher scores on posttest skills performance, but this evidence likely has low applicability to the broad VA employee base and to our training topics of interest.^{23,24}

The more recent of the two longitudinal studies evaluated proofreading skill training in 106 employees from a large state university in the Northeast who worked primarily in clerical and administrative assistant positions.²⁴ The training consisted of four weekly two-hour modules presented by videotape. Training effectiveness was compared in individuals who either volunteered to participate or who were signed up by their supervisors or according to department policy. Learning was measured based on a 20-item multiple-choice training content test and on a work sample. Compared to trainees that were assigned to training, those who volunteered to participate received higher work sample scores (correlation=0.161; $P<0.05$), but had similar results on the multiple-choice training content test (correlation=-0.008). A limitation of this study is that 24% of participants were excluded from the analysis due to incomplete data and we don’t know how the exclusions were distributed between groups. Although the study authors state that the drop-outs did not differ significantly from the analyzed group, the authors did not state what characteristics were considered in the comparison. If the excluded participants didn’t complete the study for reasons that were proxies for other factors that could modify learning and were differentially distributed between groups, then the exclusions could have biased the relationships between the training and the learning outcomes.

The second study evaluated interviewing and performance review skill training in 101 managers and supervisors working at not-for-profit research and development organization in Ohio following a two-day live workshop.²³ Employees were randomized to one of four different



workshop conditions that varied based on whether degree of choice was high or low and whether employees were given a brief and overly positive preview of the training (*ie*, “traditional announcement) or one that included input from focus groups and contained neutral and unfavorable statements about the training (*ie*, “realistic announcement”). To reduce the risk of contamination, randomization was carried out at the department level, rather than the individual level. Trainee learning was measured based on self-assessment, simulated performance reviews, and an achievement test to measure mastery of the training material. Outcome assessors were university students who received course credit for their participation and who were blinded to the experimental conditions of the trainees. Compared to employees with a low degree of choice, those with a high degree of choice reported they learned more ($F=13.05$; $P<0.01$), received higher achievement test scores ($F=4.28$; $P<0.05$), but received similar scores on role-playing performance ($F=1.16$). The main weakness of this study is that the authors did not provide any information about the comparability of the groups’ baseline characteristics and their analysis did not control for potential important differences in education or baseline skill. Another weakness of the study was that participation rate was 71% in the low-degree-of-choice group and 17% in the high-degree-of-choice group. If the employees who chose not to participate in the training did so for reasons that were proxies for other factors that modify the effectiveness of training, then their exclusion could have either over- or underestimated the relationship between degree of choice and training effectiveness.

Computer-based Training

The only evidence we found about the effectiveness of mandatory computer-based training comes from a cross-sectional study of survey responses from 212 employees involved in trainings on topics that ranged from business management to pure technical subjects.²⁵ Employees volunteered for the study by responding to an online survey invitation that was posted on the Organization’s Training Center website for two weeks. Of the 551 employees that clicked on the survey link, usable data was only available for 212 (38%). Degree of freedom in selecting training opportunities was reportedly measured using a three-item scale, but the items were not described. Method of measurement of declarative knowledge and skill-based outcomes was also not well-described, but appeared to be subjective in nature. Voluntariness of participation was not significantly associated with learning outcomes. This study provides insufficient evidence to draw conclusions about the effectiveness of mandatory computer-based training in general.

Because we found only one study evaluating mandatory computer-based trainings, we included a randomized controlled trial of *voluntary* computer-based sexual harassment training.²⁶ The randomized controlled trial of *voluntary* sexual harassment training assigned 70 employees from a medium-sized Midwestern public university to receive either computer-based or instructor-led sexual harassment training.²⁶ The computer-based training lasted 1.5 to 2 hours and consisted of five components: introduction, sexual harassment definitions, points of view, handling sexual harassment, and a comprehensive test. The instructor-led training was the same length and covered the same topics as the computer-based version. Participants in both groups completed identical tests before and after training to determine the extent of cognitive and skill-based learning. Participant’s reactions were also measured immediately following training. Post-training cognitive and skill-based learning scores did not differ significantly by training delivery method ($F=0.577$, $P=0.45$ and $F=0.723$, $P=0.398$ respectively). Reactions from participants in



both groups were not significantly different ($F=1.143$, $P=0.29$). The main weakness of this study is that the learning in the instructor-led training group may have been influenced by inherent and unavoidable inconsistencies in the training material related to variation across sessions in the trainer's presentation.

KEY QUESTION 1A: Does the effectiveness of these mandatory computer-based trainings vary by the format (eg, just-in-time training, competency-based assessment, stepped training delivery) or repetition of training?

We found no evidence that addressed this question on the topics of this brief, which are mandatory, computer-based workplace training in ethics, prevention of workplace harassment, and information security.

KEY QUESTION 1B: Does the effectiveness of these mandatory computer-based trainings vary by the method of training delivery (eg, length, audiovisual components)?

Although a large literature exists that examines computer-based learning in general, none of it is about the topics of this brief, which are mandatory, computer-based workplace training in ethics, prevention of workplace harassment, and information security.

KEY QUESTION 2: What are the harms (eg, turnover, morale, grievances, institutional and opportunity costs) of these mandatory computer-based trainings?

We found no evidence that addressed this question on the topics of this brief, which are mandatory, computer-based workplace training in ethics, prevention of workplace harassment, and information security.



SUMMARY OF MAIN FINDINGS

- We found no studies that directly evaluated the effectiveness of mandatory trainings on government ethics, workplace harassment, or privacy and information security-related topics that used computer-based delivery methods. Because of the dearth of evidence, we looked to studies in other topic areas and other delivery methods:
 - **Mandatory diversity training vs no training:** Compared to no training, there is low-strength evidence that a full-day, live mandatory diversity awareness training may not improve supervisors' and managers' knowledge at one-year post-training and may result in a worsening of non-White individuals' differential treatment of coworkers from other ethnic backgrounds. But the applicability of this evidence to the VA's broader base of employees and the much briefer computer-based training is likely low.
 - **Mandatory vs voluntary training:** For mandatory trainings in sexual harassment and diversity, two cross-sectional studies found some variability in perceived training success associated with reason for training, but provided an insufficient basis for drawing conclusions. There is low-strength evidence that higher degree of choice in taking non-computer-based training courses in performance reviews and interviewing and proofreading skills can improve posttest skills performance, but these findings likely have low applicability to the VA's broader base of employees and to the training topics of interest in this review.
 - **Computer-based training:** There is low-strength evidence of no significant differences between *voluntary* computer-based and live sexual harassment training on cognitive or skill-based learning, but these findings may have low applicability to the potentially lower motivation levels of individuals taking *mandatory* sexual harassment training.
- We found no new evidence on organizational outcomes of mandatory learning strategies. We also found no evidence on the variation in effectiveness of mandatory online training based on format (*e.g.*, just-in-time, competency-based, stepped training, *etc.*) or method of training delivery (*e.g.*, length, audio-visual components), or on the harms of mandatory online training.



DISCUSSION

The March 2010 VA TAP Brief identified very little evidence on the organizational outcomes of mandatory learning strategies and their main findings were that volition may be an important determinant of organizational learning and that training effectiveness may vary as a function of evaluation criteria, training delivery method, what is being learned, and the criterion used to operationalize effectiveness. This Evidence Brief found no new evidence on organizational outcomes and found very little evidence evaluating the new outcomes of employee learning and behavior outcomes that were added for this update.

The evidence included in this Brief likely has low applicability to the broad base of VA and VHA employees and the specific computer-based trainings in government ethics, workplace harassment, or privacy and information security-related topics of interest to the VA Mandatory Training Subcommittee. In fact, we found no studies that focused on a broad base of employees *and* evaluated a mandatory training on a topic of interest (*ie*, government ethics, workplace harassment, or privacy and information security-related topics) *and* used computer-based delivery methods. Either the topic of training was on target and it was mandatory, but the delivery method was not (*eg*, full-day, instructor-led), or the topic and delivery method were on target, but participation was voluntary, etcetera. Also, the national VA employee population has a wider range of education and aptitude compared with the study samples which largely consisted of managers and supervisors.

The lack of a standard taxonomy for describing studies of mandatory training in the literature made this topic particularly difficult to search for. Although we attempted to use an exhaustive list of search terms, our search may have missed some relevant studies. Additionally, there are some general methodological limitations of this Evidence Brief associated with streamlining the traditional systematic review methods in order to synthesize the evidence within a shortened timeframe of three months. One main limitation is that the findings of this review relate to a narrower range of outcomes than may be of interest to broader audiences. Within the given timeframe, we could only adequately evaluate a limited number of effectiveness outcomes, including trainee learning and behavior and organizational change. We did not attempt to evaluate the cost-effectiveness of mandatory training or its effects on employee reaction or motivation, which may also be important considerations in developing mandatory training policies. Other methodological limitations of this Evidence Brief include excluding studies published in languages other than English and forgoing a specific search for gray literature. Brief or rapid review methodology is still developing and there is not yet consensus on what represents best practice.

Overall, the literature on training topics of interest that are mandatory and computer-based is sparse, has methodological limitations, and has low applicability to the VA population and mandatory training approach. The VA and other large organizations that have systems in place for tracking ethics, security and harassment-related complaints could use their data to evaluate the effectiveness of their mandatory training programs in improving these important organizational outcomes. However, we did not identify any such studies from the VA or any other large organizations. Because the laws that motivate mandatory compliance training generally do not objectively define training content or evaluation standards, this may make studies of effectiveness outcomes seem unnecessary and explain the dearth of evidence.



However, weighing the cost and negative employee perceptions of their mandatory training program against its unknown benefits, the VHA is wise to be further evaluating the use and outcomes of mandatory training. Any data on ethics, security, and harassment-related complaints which is routinely collected by the VA may be a good source of information for evaluating the actual effectiveness of the VA's mandatory training program. To guide the VHA's decisions about potential ways to eliminate, reduce, or modify the current mandatory training requirements, more studies are needed that compare mandatory training approaches similar to the VHA's in topic, length, frequency, and delivery format to suggested alternatives (*eg*, just-in-time, competency-based, stepped training, *etc*). The VHA may consider implementing some pre-testing and piloting a few alternatives to the current mandatory training approach and use its own VA Learning University Training Management System (VALU-TMS) data to evaluate comparative effectiveness. Results from such studies could potentially be useful to the broader organizational education audience as a whole.

SUPPLEMENTAL MATERIALS

The following supplemental materials are available on the ESP website with this Evidence Brief:

1. Search strategies
2. List of studies excluded after full-text review
3. Evidence tables
 - a. Data abstraction of included longitudinal studies
 - b. Quality assessment of cohort studies
 - c. Risk of bias assessment of randomized controlled trials
4. Peer reviewer comment disposition table



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SUPPLEMENTAL MATERIALS
**Evidence Brief: The Effectiveness Of Mandatory
Computer-Based Trainings On Government
Ethics, Workplace Harassment, Or Privacy
And Information Security-Related Topics**
Supplemental Materials

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Prepared For:

Department of Veterans Affairs
Veterans Health Administration
Quality Enhancement Research Initiative
Health Services Research And Development Service
Washington, DC 20420

Prepared By:

Kim Peterson, M.S.
Ellen McCleery, M.P.H.

Evidence-Based Synthesis Program (ESP)
Coordinating Center
Portland VA Medical Center
Portland, OR

Mark Helfand, M.D., M.P.H., M.S., Director



VA
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SEARCH STRATEGIES

Ovid MEDLINE and OLDMEDLINE (1946 to May Week 1 2014), Ovid MEDLINE In-Process & Other Non-Indexed Citations May 16, 2014

1	staff development/ or inservice training/
2	((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) adj5 (training or education* or learning or skill* or development or instruction or orientation or workshop* or online or computer* or internet* or web-based or e-learning or electronic* or virtual or simulation*)).ti,ab.
3	sexual harassment/ or cultural diversity/ or exp ethics/ or privacy/ or confidentiality/ or computer security/ or prejudice/ or racism/ or cultural competency/ or ageism/ or “Health Insurance Portability and Accountability Act”/
4	((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) adj5 (training or education* or learning or skill* or development or instruction or orientation or workshop* or online or computer* or internet* or web-based or e-learning or electronic* or virtual or simulation*) adj7 (harrasment* or ethics or discriminat* or misconduct or prejudic* or racism or racist or (cultural* adj2 competen*) or whistleblower* or privacy or confidentiality or security)).ti,ab.
5	1 and 2
6	1 and 3
7	4 or 5 or 6
8	limit 7 to english language
9	Education, Medical, Continuing/ or (CME or continuing medical education).ti,ab.
10	8 not 9
11	limit 10 to (comment or editorial or letter)
12	10 not 11

Ovid PsycINFO (1806 to March Week 2 2014)

1	personnel training/ or training/ or inservice training/ or on the job training/ or sensitivity training/
2	((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) adj5 (training or education* or learning or skill* or development or instruction or orientation or workshop* or online or computer* or internet* or web-based or e-learning or electronic* or virtual or simulation*)).ti,ab.
3	1 and 2
4	(harrasment* or ethics or discriminat* or misconduct or prejudic* or racism or racist or (cultural* adj2 competen*) or whistleblower* or privacy or confidentiality or security).ti,ab.
5	1 and 4
6	3 or 5
7	limit 6 to english language
8	limit 7 to (abstract collection or bibliography or “column/opinion” or “comment/reply” or editorial or encyclopedia entry or letter or obituary or poetry or publication information or reprint or review-book or review-media or review-software & other)
9	7 not 8

EBSCO Business Source Premier (1965 to March Week 2 2014)

S1	DE “EMPLOYEE training” OR DE “EMPLOYEE orientation” OR DE “SELF-managed learning (Personnel management)” OR DE “EMPLOYEE training -- Contracting out” or DE “safety education”
S2	AB ((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) N5 (training* or education* or learning or skill* or development or instruction* or orientation* or workshop* or program* or online or computer* or internet* or web-based or e-learning or electronic* or virtual*))
S3	AB safety or harrass* or hostile or ethic* or discriminat* or misconduct or prejudic* or racism or racist or multicultural* OR “organizational culture” OR (cultural* N2 competen*) or whistleblower* or privacy or confidentiality or security
S4	DE Research OR DE “EMPIRICAL research” OR DE “INDUSTRIAL research” OR DE “FEASIBILITY studies” OR DE “GOVERNMENT research” OR DE “QUANTITATIVE research” OR DE “COMPARATIVE studies” OR DE “LONGITUDINAL method” OR AB (“repeated measures” OR pre* N2 Post* OR before N2 after OR longitudinal* OR “time series” OR “controlled trial*” or randomized or randomised)
S5	(S1 AND S2 AND S4)
S6	(S1 AND S3 AND S4)
S7	(S5 OR S6)

GALE Business Economics & Theory Collection (Searched 03/17/2014)

1	SUBJECT(“employee training” or “on-the-job training” or “employee safety education” or “diversity training” or “sensitivity training” or “employee orientation” or “occupational training” or “employee development” or “computer based training”)
2	ABSTRACT((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) AND (training* or education* or learning or skill* or development or instruction* or orientation* or workshop* or program* or online or computer* or internet* or web-based or e-learning or electronic*))
3	1 and 2
4	ABSTRACT(study or studies or longitudinal or trial* or “time series” or “repeated measures” or randomized or randomised or pre-test or pretest or observational or “systematic review” or research or “control group*” or before or effective* or assess*)
5	3 and 4
6	Limit 5 to English
7	ABSTRACT(safety or harrass* or hostile or ethic* or discriminat* or misconduct or prejudic* or racism or racist or multicultural* OR “organizational culture” OR “cultural competency” or whistleblower* or privacy or confidentiality or security)
8	1 and 4 and 7
9	Limit 8 to English

EBSCO Eric (1966 to March Week 2 2014)

S1	DE “On the Job Training” OR DE “Job Skills” OR DE “Training Methods” OR DE “Workplace Learning” OR DE “Job Training”
S2	DE “Employees” OR DE “Electronic Learning” OR DE “Computer assisted instruction” OR DE “web-based instruction” OR AB ((employee* or workforce or work force or staff* or job or worker* or occupation* or workplace or work place) N3 (training* or education* or learning or skill* or development or instruction* or orientation* or workshop* or program* or online or computer* or internet* or web-based or e-learning or electronic* or virtual*))
S3	(DE “Research” OR DE “Evaluation” OR DE “Meta Analysis” OR DE “Measurement” OR DE “Pretests Posttests”) OR AB (“repeated measures” OR pre* N2 Post* OR before N2 after OR longitudinal* OR “time series” OR “controlled trial*” or randomized or randomised or comparative or “systematic review”)
S4	AB safety or harrass* or hostile or ethic* or discriminat* or misconduct or prejudic* or racism or racist or multicultural* OR “organizational culture” OR (cultural* N2 competen*) or whistleblower* or privacy or confidentiality or security
S5	(S1 AND S2 AND S3)
S6	(S1 AND S3 AND S4)
	(S5 OR S6) NOT AB (student* or youth* or child* or teen* or adolescent* or grade)
S7	Limiters- Publication Type: Books, Collected Works (All), Dissertations/Theses (All), Journal Articles, Reports - Descriptive, Reports - Evaluative, Reports - Research

Proquest PAIS (1972 to March Week 2 2014)

S1	su(employees training OR government employees training OR employees)
S2	ab(employe* OR staff* OR job OR work* OR occupation* OR corporat* OR personnel)
S3	s1 or s2
S4	SU(computer-assisted instruction OR training)
S5	AB(training* OR learning OR skill* OR development OR instruction* OR orientation* OR workshop* OR program* OR online OR computer* OR internet* OR web-based OR e-learning OR electronic* OR virtual*)
S6	s4 or s5
S7	AB(pre* w/2 post* OR before w/2 after OR “repeated measures” or randomized or randomised or “systematic review” or meta-analysis or “time series” or longitudinal*)
S8	s3 AND s6 AND s7
S9	AB(student* or youth* or teenager* or adolescent* or child*)
S10	s8 not s9

LIST OF STUDIES EXCLUDED AFTER FULL-TEXT REVIEW

(Intervention did not include mandatory, online, or compliance training, was not a study, or only included trainee satisfaction as an outcome.)

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EVIDENCE TABLES

DATA ABSTRACTION OF INCLUDED LONGITUDINAL STUDIES

First Author Year	Population N	Training topic Training delivery	Outcomes	Voluntary measure	Results	Study design
Mathieu 1992	Employees (primarily clerical/admin positions) from a large U.S. university N=106	Proofreading skills Instructor-led Four 2-hour modules presented one per week	Behavior Pre- and post-training Work sample Learning Post-training Multiple choice test Reactions Post-training Likert-type scale	Participants either volunteered or were enrolled by their supervisor in the training	Voluntary participation was associated with higher work sample scores (behavior). Correlation=0.161, $P<0.05$ Voluntary participation was not associated with multiple-choice test performance (learning). Correlation=-0.008, $P>0.05$	Cohort
Hicks 1987	Managers and supervisors from a large not-for-profit research and development organization N=101	Performance reviews and interviewing Instructor-led No additional information on workshop	Behavior Timing unclear Mock performance review Self-reported learning Post-training Self-assessment Learning Post-training Test/re-test	Four groups varying training announcement and choice of participation: 1) Realistic preview/high choice 2) Realistic preview/low choice 3) Traditional preview/high choice 4) Traditional preview/low choice	Degree of choice did not affect role playing performance (behavior). $F=1.16, P>0.05$ Degree of choice was positively associated with achievement test scores (learning). $F=4.28, P<0.05$	Controlled trial
Sanchez 2004	Supervisors or managers employed by a U.S. county government N=125	Diversity awareness Instructor-led One full-day session 1. Presentation/discussion 2. Question and answer 3. Group exercise 4. Case study	Behavior Post-training (1 year) Differential treatment Learning Post-training (1 year) Knowledge of biases Cultural Awareness Reactions Post-training Likert-type scale	No training Control group matched by tenure, ethnicity, sex, rank, and functional area	Training resulted in higher levels of differential treatment (behavior). $P<0.05$ Training had no effect on knowledge of social perception biases (learning). $P>0.05$	Cohort

First Author Year	Population N	Training topic Training delivery	Outcomes	Voluntary measure	Results	Study design
Preusser 2011	Employees from a medium-sized U.S. public university N=70	Sexual Harassment Instructor and computer-based 1.5-2 hour duration 5 sections including scenarios, quizzes	Learning Pre- and post-training Multiple choice test Reactions Post-training Likert-type scale	Assigned to computer or instructor-based training 1.5-2 hour duration Identical content	Training experience had no effect on test scores (learning). <i>F</i> =0.577, <i>P</i> =0.45 (cognitive) and <i>F</i> =0.723, <i>P</i> =0.398 (skill-based)	Controlled trial

QUALITY ASSESSMENT OF COHORT STUDIES

Author Year	Did the study attempt to enroll all (or a random sample of) patients meeting inclusion criteria, or a random sample (inception cohort)?	Were the groups comparable at baseline on key prognostic factors (e.g., by restriction or matching)?	Did the study use accurate methods for ascertaining exposures and potential confounders?	Were outcome assessors and/or data analysts blinded to the exposure being studied?	Did the article maintain comparable groups (report attrition, contamination, adherence, and cross-over)?	Did the study perform appropriate statistical analyses on potential confounders?	Is there important differential loss to follow-up or overall high loss to follow-up?	Were outcomes pre-specified and defined, and ascertained using accurate methods?	Quality rating
Sanchez 2004	Unclear. Unknown if 69 participants in the training group represent all training attendees.	Unclear. Groups were matched by tenure, ethnicity, sex, rank and functional area.	Yes.	Unknown.	Unknown.	Yes.	Unknown. Data from 19% of comparison group were discarded due to incomplete surveys. No demographic differences observed, but other differences affecting training outcomes may exist.		Fair.

Mathieu 1992	Yes. All 140 training participants were asked to complete study procedures.	Unclear.	Yes.	Unclear.	Unclear. 76% of original group completed procedures, unclear how many in each group.	Yes.	No.	Yes.	Fair.
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RISK OF BIAS ASSESSMENT OF RANDOMIZED CONTROLLED TRIALS

Author Year	Adequate sequence generation?	Adequate allocation concealment?	Blinding of participants, personnel and outcome assessors?	Incomplete outcome data adequately addressed?	Study reports free of suggestion of outcome reporting bias?	Study free of other sources of bias?	Risk of bias?
Preusser 2011	Unclear.	Unclear.	No. Blinding of participants was not possible, learning test was self-administered. Not a concern.	Unclear.	Yes.	Unclear. Material in the instructor-led session inconsistent with the computer-based training may be a confounding factor.	Unclear.
Hicks 1987	Unclear.	Unclear.	No. Unclear. Yes. “six university students... evaluated the tapes of role playing sessions and also evaluated the written achievement tests...and were blind to the experimental conditions of trainees.”	Unclear.	Yes.	No. “Of those with a high degree of choice, 46 (17%) attended the program, whereas 55 (71%) who had a low degree of choice attended.”	High.

PEER REVIEWER COMMENT DISPOSITION TABLE

Reviewer	Comment	Response
1. Are the objectives, scope, and methods for this review clearly described?		
1	Yes; Clearly and well-articulated	Thank you.
2	Yes	
3	Yes	
4	Yes	
5	No; I checked ‘no’ here because one has to read for a while to get to the section. Once there, however, things were clearly described. I would have liked to see an executive summary or abstract at the beginning of the document, which I imagine would be useful to many readers.	We added a one-page executive summary.
6	Well done!! The report reads very nicely, is concise and well organized. Thank you!!	Thank you.
2. Is there any indication of bias in our synthesis of the evidence?		
1	<p>No; I have checked “no,” but I do have questions regarding selection bias.</p> <p>My sole question regarding bias relates to the selection of the final articles from the initial 3,504. Initially your key question was about the effectiveness of mandatory online training, but on p. 6 you seemed to have narrowed the question to government ethics, harassment or privacy and information security. If these criteria were used to exclude articles, you may have biased your report because it is unlikely, as you discovered, that there is research and/or strong evidence to address this reasonably small subset of criteria as compared to over-all populations and training. When looking at your search strategies, it appears that you did not search by key words having to do with “government ethics, harassment or privacy and information security” except for EBSCO. So would like to know if the selection of final very small n = 7 could have been unintentionally biased. Did you sample any of the excluded articles to test for possible bias...e.g., # 18, 67, 83, etc. Also the dates of 50% of the selected studies was pre 2000 --- one would think that it would be important to select more recent articles.</p>	<p>To more accurately reflect the narrow focus of our report, we changed the title of our report to “<i>Evidence Brief: The Effectiveness of Mandatory Computer-based Trainings on Government Ethics, Workplace Harassment, or Privacy and Information Security-related Topics</i>” and changed the wording of Key Question 1 to “<i>What is the effectiveness and comparative effectiveness of mandatory computer-based trainings on government ethics, workplace harassment, or privacy and information security-related topics?</i>”</p> <p>We conducted an intentionally broad search, but unfortunately very few studies provided even indirect evidence. We reviewed the three articles cited in the comment and none provided the same level of indirect evidence contained in the report. Bartel (2000) is a narrative review, Frisque et al. (2008) outlines a training that is neither mandatory nor online, and Holladay et al. (2008) outlines a computer-based training for students that is not mandatory and does not vary delivery method.</p>
2	No	
3	No	
4	No	
5	No	
6	No response	

Reviewer	Comment	Response
3. Are there any <u>published</u> or <u>unpublished</u> studies that we may have overlooked?		
1	Yes; I did not have an opportunity to review the entire list of titles of the published or unpublished studies that you excluded, but did note in # 2 above three examples that seemed potentially relevant and more recently published. I recommend your investigator develop a methodology, other than key words, for at least sampling the abstracts or full articles of the excluded studies. We have conducted publication reviews, as you have done, and did find that searching by key words only can bias the search because you are dependent on the author or journal’s determination of a title and abstract.	See the response to item #2, reviewer #1.
2	No	
3	Yes; Perhaps. That is, it seems astonishing to me that no one could have looked back at effectiveness of VA sexual harassment training, as measured by number of complaints received? That is, this training has been mandatory for >15 years, and claims regarding harassment are tracked, so this should be trackable.	We agree that it seems that VA data on trackable claims regarding harassment could be used to evaluate the effectiveness of mandatory training, but did not identify any such studies. We have added this suggestion to the Discussion that the VA consider undertaking such an analysis.
4	See item 6 below.	Please see response to item #6.
5	<p>Yes;</p> <p>1) Page 1, line 32 – there are several studies in the literature (systematic reviews from AHRQ, Cochrane, D Davis/P Mazmanian and others) on ‘what works’ in continuing medical education. Those studies are relevant to this review and I would suggest they be included for context (albeit that none of these studies examine ‘mandatory’ CME.</p> <p>2) There may be some studies in the literature (none that I recall seeing, though) on the effect of state-mandated CME for physicians on specific topics (Ie pain management, diversity, etc) on patient outcomes. Those might be worth looking for.</p> <p>3) Page 2 line 3 – Don Moore PhD has published a very useful outcomes evaluation frame work for CME (J Cont Ed Health Prof, 2009 I believe)</p>	We excluded studies of CME. It is a voluminous literature and has already been well-studied. We added exclusion criteria to the report to clarify this and other exclusions.
6	No response	
4. Please write any additional suggestions or comments below. If applicable, please indicate the page and line numbers from the draft report.		
1	<p>Because of the work that I am currently doing for all of our Kaiser Permanente research centers, I found your Briefing to be very thoughtful and helpful in thinking through a number of the issues and questions we are considering about our mandatory research compliance training. And although I have commented on the potential bias of the selected articles, intuitively I agree with your overall conclusions about the effectiveness of mandatory training. So I appreciate the work and synthesis that you have done, and it raises additional questions and opportunities:</p> <p>1) Since the VA and Kaiser are often considered comparators, is there an opportunity here to conduct research using our two populations or a small subset thereof?</p>	<p>We thank the reviewer for the comments and offer the following responses:</p> <p>1) We have suggested that the data on ethics, security and harassment-related complaints which is routinely collected by the VA may be a good source of information for evaluating the actual effectiveness of the VA’s mandatory training program. It does seem that there is an opportunity for the VA and Kaiser to collaborate in using data from both populations to conduct research on the effectiveness of your respective mandatory training programs.</p>

Reviewer	Comment	Response
1	<p>2) Have you considered publishing your evidence summary?</p> <p>3) Have you considered a slightly different question ...i.e. rather than trying to compare the effectiveness because that already probably narrows your analysis, have you looked solely at “What are effective training strategies for mandatory compliance training?” I know “effectiveness” and “comparative effectiveness” are very popular concepts now, but if it is a given that we will be doing mandatory compliance training, perhaps looking at most effective strategies would be another angle.</p>	<p>2) We welcome the reviewer’s suggestions regarding journals that may be interested in publishing this review.</p> <p>3) This review actually did address the question of “What are effective training strategies for mandatory compliance training?” While we initially intended to prioritize studies of comparative effectiveness, when we discovered that there was a dearth of such studies, we expanded our criteria to include single-group studies that investigated the effectiveness of individual strategies. We have updated our study design inclusion criteria to reflect the broadening of our scope.</p>
2	p.3, line 2 change Board to Council;	Corrected.
3	I have been a member of the mandatory training work group for several years. We figured that mandatory training would never disappear, so have taken the approach of “managing” it. One popular approach has been for there to be a “test out” option. Your report did not include anything about this. I may be using incorrect tags, but can’t find anything, either. That seems surprising, given that the “test out” option has been discussed at high levels in agency.	We did search for studies that used a competency-based or test-out option and added clarification of this. We did not find any evidence on this format, though.
4	No response	
5	<p>Some of my comments may be a bit naïve, due to lack of familiarity with some of the VA requirements and systems.</p> <p>1) In several medical organizations, mandatory training on blood borne pathogens (HIV, Hepatitis) is required. You might consider adding those to your search terms. (I don’t know if the VA requires its health care professionals to undergo this training)</p> <p>2) I noted some of the searches included specific types of learning formats (ie online, workshop) but did not see that simulation was included as a search term. Given recent team-based trainings for safety (ie the VA’s Team STEPPS), you might consider adding simulation as a search term.</p> <p>3) Page 12, line 3- “optimize the benefits”. Given the dearth of findings, I’m not sure that one can say there are any really known benefits. I think I understand the intent of the sentiment – a different phraseology might be something along the lines of ‘conduct such statutorily required trainings most expeditiously’.</p>	<p>1) Training in blood borne pathogens was outside of the scope of this review, which focused on trainings required of ALL VA employees.</p> <p>2) We added “<i>simulation</i>” as a search term which returned 6 additional citations that were not relevant to the review.</p> <p>3) Changed to: “<i>However, weighing the cost and negative employee perceptions of their mandatory training program against its unknown benefits, the VHA is wise to be further evaluating the use and outcomes of mandatory training.</i>”</p>
6	I think all references to VHA should likely be changed to VA for wider organizational applicability. There may be a few VHA references (for example when describing the sub-committee) that should stay depending on context.	Corrected.

Reviewer	Comment	Response
5. Are there any VA clinical performance measures, programs, quality improvement measures, patient care services, or conferences that will be directly affected by this report? If so, please provide detail.		
1	No response	
2	Of interest is what impact, if any, mandatory training makes on behavior or performance. You have provided an academically sufficient report of the literature. Beyond publications, has no federal agency or corporation actually measured to see if there’s been a positive (practical) impact of such training programs? Are there no data from DOD or VA or other large agencies that show less complaints of sexual harassment or fewer instances of sexual assault? Better protection of computers and information? Can we find out? If there is, we should so state. If there is no practical, or results level evidence, we should also so state in this report. Mandatory training goes well beyond what VA assigns, and is in the millions of hours within VHA. The costs are huge. Is there any benefit?	We added this to the discussion: <i>“The VA and other large organizations that have systems in place for tracking ethics, security and harassment-related wrongdoings could use their data to evaluate the effectiveness of their mandatory training programs in improving these important organizational outcomes. However, we did not identify any such studies from the VA or any other large organizations.”</i>
3	I hope so: the number of required training courses has gone up and down over time, and seems to be increasing.	
4	Mandatory training.	
5	Not that I am aware of.	
6	No response	
6. Please provide any recommendations on how this report can be revised to more directly address or assist implementation needs.		
1	See above	
2	See above	
3	No response	
4	<p>I think an overwhelming theme from the report is the lack of evidence for benefit from broad-based traditional mandatory training. On the other hand the evidence you cite for the costs of mandatory training is clear. It might be useful to highlight the combination of these two elements in at least a qualitative cost-benefit analysis (clear costs to achieve unclear benefits), as the potential policy implications of that calculus are clear.</p> <p>A related issue that is not clarified in the report, perhaps due to lack of data, is whether there is any evidence for a dose- response of training. E.g. even if there were evidence for a benefit of a four hour training compared to no training at all on a particular topic, but there is not evidence that a four hour training is superior to a one hour training, one might choose to achieve a 75% cost savings by abbreviating the training rather than eliminating it entirely.</p>	<p>We modified text in the Discussion to better highlight the combination of the cost-benefit concepts: <i>“However, weighing the cost and negative employee perceptions of their mandatory training program against its unknown benefits, the VHA is wise to be further evaluating the use and outcomes of mandatory training”</i></p> <p>Dose-response of training: This was definitely an issue of interest that we attempted to address in Key Question 1b. But, yes, we found no evidence that compared different durations of training. We have better clarified these findings in our Summary section.</p>

Reviewer	Comment	Response
4	<p>Finally, perhaps it might be useful to see if there were any identified benefits to institutional broad training efforts on emergency topics like fire extinguisher use or performing basic cardiac life support. VA trains many on these skills, and may repeat the training on a fixed arbitrary time schedule. A small subset of those trained will unexpectedly be called upon to use those skills. I wonder if there any studies that have looked retrospectively to see if training has improved the emergency responses. For example, among the many employee bystanders to a fire scene or a cardiac arrest in the organization nationwide in the past year, was good performance (the likelihood that an employee responded correctly to the emergency event) significantly correlated with how recently previous to the event that they had had their last mandatory training on how to perform in such an emergency.</p>	<p>Emergency topics: These were outside of the scope of this review. We agree that training in emergency response skills has transfer of training characteristics that are similar to those for ethics, sexual harassment and information security, such as chance for skill decay due to lack of opportunity for use. Perhaps emergency topics can be added in the next update or considered as a topic for another review.</p>
5	<p>Executive summary at the beginning of the document</p>	<p>We added a one-page executive summary at the beginning.</p>
6	<p>I think this would benefit from a ONE Page EXSUM</p>	<p>We added a one-page executive summary at the beginning.</p>